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TECHNICAL MEMORANDUM

(TM Series)

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Systems Division Program, for Space Systems Division, AFSC.

SCF Computer Program Systems Manual
General Purpose Satellite Programs
Convert Corrected Elevation to Apparent (INVR)

by

Nancy Speer

23 January 1963

Approved

J. D. Marioni

SYSTEM

DEVELOPMENT

CORPORATION

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SANTA MONICA

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10.17.01

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SUBROUTINE IDENTIFICATION

- A. Title: Convert Corrected Elevation to Apparent (INVR) -
Ident. F94, Mod BB.
- B. Programmed: J. C. Lenhoff, Lockheed Missile and Space Division.
- C. Revised and Documented: 9 November 1962, Nancy Speer, System
Development Corporation.

PURPOSE

By linear interpolation, INVR converts any number of corrected elevations to their corresponding apparent elevations.

USAGE

- A. Calling Sequence

L	RTJ	INVR
L+1	ZRO	EC
	ZRO	N
L+2	NORMAL RETURN	

where: EC = Location of first corrected elevation

N = Number of elevations to be processed

- B. Inputs

The corrected elevations must be expressed in floating-point radians within the range 0 to 2π , effectively. (See Restrictions)

- C. Results

The resulting apparent elevations in floating-point format are placed in the same locations as the input elevations.

RESTRICTIONS

- A. Accuracy

Accuracy ranges from 3 decimal places for values less than 6° to total accuracy, depending on the magnitude of the input and its proximity to any pair of entries in the tables used for interpolation.

- B. Input Limits

The input must be within the range -0.008981462391 to $+0.2\pi$. Values outside these limits will not be reduced properly and will cause an error return from INDIV, which causes a jump to SUBERR and consequent halt.

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C. Environment

INVRC uses INDIV and SUBERR. Index registers 1 and 2 are saved, used, and restored. No reference is made to the Reference Pool.

TIMING

Maximum $252.4 \times N + 101.4$ microseconds plus time for INDIV
Minimum $144.0 \times N + 101.4$ microseconds plus time for INDIV
 where: N = Number of elevations

STORAGE REQUIREMENTS

Storage Allocation

Program	34_{10} cells
Constants	77_{10} cells
Temporary Storage	1 cell
<hr/>	
TOTAL	112_{10} cells

REFERENCES

- A. LMSD-447578, Page 55.05.15, Systems Manual Subroutine Description for INVRC.
- B. TM-(L)-715/025/00, Utility Program Descriptions, Milestone XI, Interpolate by Divided Differences (INDIV). (AFCPL Catalog Number 75024)
- C. LMSD-447578, Page 50.06.01, Systems Manual Subroutine Description for SUBERR.
- D. N-17495/016/00, Description of Revised INVRC.
- E. TM-714/032/00, General Purpose Satellite Computer Program Descriptions, Milestone XI, Correct Apparent Elevation for Refraction (RC). (AFCPL Catalog Number 75599)
- F. TM-(L)-714/033/00, General Purpose Satellite Computer Program Descriptions, Milestone XI, Convert Corrected Elevation to Apparent (INVRC), 9 November 1962. (AFCPL Catalog Number 75594)

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System Development Corporation,
Santa Monica, California
SCF COMPUTER PROGRAM SYSTEMS MANUAL
GENERAL PURPOSE SATELLITE PROGRAMS
CONVERT CORRECTED ELEVATION TO
APPARENT (INVR).
Scientific rept., TM(L)-721/017/00,
by N. Speer. 23 January 1963, 2p.
(Contract AF 19(628)-1648, Space
Systems Division Program, for Space
Systems Division, AFSC)

Unclassified report

DESCRIPTORS: Programming (Computers).
Satellite Networks.

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States that by linear interpolation,
INVR converts any number of
corrected elevations to their
corresponding apparent elevations.

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